

HealthAI: Intelligent Healthcare Assistant

Project Documentation

Team:

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Abstract

The project HealthAI: Intelligent Healthcare Assistant aims to leverage IBM Granite Generative AI Models to assist in healthcare-related tasks such as medical question answering, symptom analysis, and general wellness guidance. By integrating Gradio for user interaction and deploying on Google Colab's T4 GPU, the solution demonstrates how generative AI can be effectively utilized for healthcare applications. The assistant does not replace professional medical advice but serves as an intelligent aid for quick, accessible, and reliable information.

Introduction

The healthcare sector requires faster, smarter, and more accessible solutions for both patients and professionals. With the power of IBM Granite Generative AI Models, we can create a virtual assistant capable of processing natural language queries and providing meaningful healthcare-related responses.

The HealthAI project integrates multiple technologies:

- IBM Granite Models from Hugging Face for generative intelligence.
- Gradio Framework for building an interactive user interface.
- Google Colab T4 GPU for scalable and efficient execution.
- GitHub for version control and collaboration.

This project showcases a blend of AI-driven innovation and real-world healthcare needs to create a prototype solution for accessible digital healthcare support.

Objectives

- To build an AI-powered healthcare assistant using IBM Granite Models.
- To provide accurate, generative responses for medical queries and general wellness.

- To create an interactive Gradio-based web UI for end users.
- To demonstrate deployment and execution in Google Colab.
- To manage project collaboration and versioning via GitHub.

System Requirements

Hardware Requirements

- Google Colab T4 GPU / Equivalent GPU-enabled system
- Minimum 8GB RAM
- Stable Internet Connection

Software Requirements

- Python (3.10 or higher)
- Gradio Framework
- Hugging Face Transformers
- IBM Granite Models
- Git for version control
- Google Colab Environment

Pre-requisites

- Gradio Framework Knowledge → Gradio Documentation
- IBM Granite Models (Hugging Face) → IBM Granite Models
- Python Programming Proficiency → Python Documentation
- Version Control with Git → Git Documentation
- Google Colab's T4 GPU Knowledge → Google Colab

Project Workflow

- Activity-1: Exploring Naan Mudhalvan Smart Interz Portal.
- Activity-2: Choosing an IBM Granite Model From Hugging Face.
- Activity-3: Running Application In Google Colab.
- Activity-4: Upload Project in GitHub.

Methodology

1. Data Exploration&Setup – Explore Hugging Face IBM Granite models and import into Python environment.
2. Building the Interface – Use Gradio to create a healthcare chatbot interface.
3. Integration&Testing – Connect IBM Granite model with Gradio and test queries.
4. Deployment – Run on Google Colab with GPU support and store project on GitHub.

Expected Output

- An AI-powered healthcare assistant chatbot.
- User-friendly Gradio interface for interaction.
- Working deployment on Google Colab.
- Source code and documentation uploaded on GitHub.

Testing

Unit testing checked model loading, Gradio UI, and Python functions.

Integration testing ensured smooth working between IBM Granite Model, Gradio, and Google Colab.

Functional testing verified that queries gave correct healthcare-related responses with disclaimers.

Performance testing measured response time on GPU and CPU.

Usability testing confirmed the interface is simple and user-friendly.

Security testing ensured safe handling of user input.

Conclusion

The HealthAI Project demonstrates how IBM Granite Generative AI Models can be effectively applied in the healthcare sector for creating intelligent assistants. This prototype provides interactive, generative responses that can help users with healthcare information. While not a substitute for professional medical advice, it highlights the potential of AI in augmenting digital healthcare support.

References

- [Gradio Documentation](#)
- [IBM Granite Models – Hugging Face](#)
- [Python Official Documentation](#)
- [Git Documentation](#)
- [Google Colab](#)